GUIDE FOR HAND-HELD POWER SAW

FIELD OF THE INVENTION

The present invention generally relates to an apparatus for guiding a hand-held power saw for a precision cut. More particularly, the present invention relates to a portable apparatus for guiding a hand-held power saw to consistently obtain straight and accurate cuts at commonly used angles.

BACKGROUND OF THE INVENTION

There are various products available on the market for assisting an individual with obtaining precision cuts at various angles. However, most of these products are costly, difficult to use, and not very portable, and, therefore, impractical or unsuitable for the around-the-home handyperson.

Home handypersons are likely to own hand-held power saws. However, it can be difficult to align a workpiece and the hand-held power saw to obtain a cut at the correct angle. It is also difficult to maintain a straight cut by hand. A fine adjustment to a cut (e.g. shaving off 1/8 inches) is also very difficult to obtain by hand. As a result, it is desirable to have an inexpensive product that serves to align and guide a hand-held power saw for obtaining accurate and straight cuts at angles commonly desired by a home handyperson. Parameters for common use by a home handyperson would typically

include a workpiece width of up to 5 ½ inches and height of up to 1 ½ inches (the actual dimensions of a 2x6), and angles of ninety, thirty, forty-five and sixty degrees.

Previously disclosed apparatuses used to guide hand-held power saws have various deficiencies and limitations that negatively impact the accuracy of the cut, the straightness of the cut, in addition to the portability and versatility of the apparatuses, and the ease of using the apparatuses. Many apparatuses require the complicated assembly of many parts, or must be used with yet other products such as clamps. Other apparatuses have parts that are highly susceptible to wear and tear through use and likely to require replacement or repair. Apparatuses requiring much hand-eye coordination for alignment are not user-friendly as they may be confusing, tedious or difficult to manipulate, particularly for those with poorer eyesight, reduced mobility, unsteady hands, or limited dexterity. It is also desirable that a guide not have any parts which may move during the cut and, thus, affect the alignment.

U.S. Patent No. **5,226,345** issued to Gamble discloses a portable guide for hand power saws. The invention discloses two guide bars for holding the workpiece in place, one of which guide bars is movable with the use of kerf gauges. Using the kerf gauges, the movable guide bar, and multiple different materials, complicates the design of the guide and increases the expense of its production. The invention has parts which are, as stated in the Gamble patent, subject to wear and tear and will require replacement. The kerf gauges add time to the process for obtaining a cut as the wingnuts on the kerf gauges must be tightened and loosened for each use. The edges used to guide the power saw do

not necessarily extend beyond the guide bars and, thus, do not ensure a straight cut through-out as the power saw is not properly supported in alignment at the start and end of the cut. Only two angular alignments are allowed by the invention.

There exists a market for a product that is portable and convenient for the home handyperson to use for guiding a hand-held power saw to produce straight and accurate cuts at commonly desired angles. Further, it is desirable that the product be easy to assemble, easy to manipulate, inexpensive and not susceptible to significant wear and tear.

SUMMARY OF THE INVENTION

The present invention comprises a portable apparatus for guiding a hand-held power saw for obtaining straight and accurate cuts at commonly desired angles. The apparatus comprises a platform having an upper face and a lower face, of which the upper face is operative to receive a downward force, while the lower face is operative to engage a workpiece. Two spaced apart parallel runners extend perpendicularly from the lower face of the platform. A first guiding strip is situated in a plane parallel to the platform when the first guiding strip is in engagement with the runners, forming a first pre-determined angle with the runners. The first guiding strip has a first guiding edge situated on a side of the first guiding edge, which first guiding edge is operative to guide the base of a hand-held power saw in a straight line at said first pre-determined angle. Similarly, the apparatus is also comprised of a second guiding strip which is situated in a

plane parallel to the platform when in engagement with the runners. The second guiding strip then transverses the runners at a second pre-determined angle, and a second guiding edge, situated on the side of the second guiding strip, is operative to guide the base of a hand-held power saw in a straight line at the second pre-determined angle. The runners are operative to elevate said platform from a work surface, to guide and engage an elongated edge of the workpiece, and to support and position the base of a hand-held power saw in the plane of the upper surface of the workpiece.

Other objects and advantages of the invention will become clear from the following detailed description of the preferred embodiment, which is presented by way of illustration only and without limiting the scope of the invention to the details thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a top view of the apparatus in accordance with the invention.

Figure 2 is a cross section of the apparatus from a side view.

Figure 3 is a side view of a guiding strip.

Figure 4 is a top view of the apparatus depicting the use of a hand-held power saw to cut a sixty degree angle on a workpiece.

Figure 5 is a top view of the apparatus depicting use of the apparatus with the Black & Decker Workmate **400** (Trademark).

Figure 6 is a perspective view of an alternative peg.

Figure 7 is a perspective view of a peg lock.

Figure 8 is a side view of a runner.

Figure 9 is a perspective view of a workpiece cut at one end at two angles for a double-angled cut.

DETAILED DESCRIPTION OF THE INVENTION

Referring to **Figures 1-3**, guiding apparatus **10** has a platform **12** with an upper face **14** and a lower face **16**, and edges **18**, **20**, **26**, **28** and **30**, of which edges **18** and **20** run parallel to each other. Referring to **Figure 2**, runners **22** and **24** extend perpendicularly to the lower face **16** a distance **25** of 1 3/8 inches. The distance **68** between inner edges **70** and **72** of runners **22** and **24** respectively, is 5 5/8 inches.

Runner **22** extends longitudinally beyond edges **26** and **28**, and runner **24** extends longitudinally beyond edges **26** and **30**. Runner **22** has peg holes **31**, **36** and **40** on its upper surface, and runner **24** has peg holes **34** and **38** on its upper surface. Guiding strip

42 has guiding edge **43**, and pegs **44** and **46**, which extend perpendicularly to lower surface **56** of guiding strip **42** and are operative to engage peg holes **34** and **31**, respectively, to form an angle **A** of ninety degrees between guiding strip **42** and runners **22** and **24**. Similarly, guiding strip **48** has guiding edge **49**, and pegs **50** and **52**, which extend perpendicularly to lower surface **58** of guiding strip **48** to engage peg holes **38** and **36**, respectively, to form an angle **B** of forty-five degrees between guiding strip **48** and runners **22** and **24**. So, positioned, guiding strip **48** extends longitudinally in the same direction as edge **28** of platform **12**.

In an alternate positioning of guiding strip **48**, angle **C** of sixty degrees is formed between guiding strip **48** and runners **22** and **24** when peg **66** engages peg hole **54** in guiding strip **48** and peg hole **40** in runner **22**, and peg **50** engages peg hole **38**. Edge **30** of platform **12** allows guiding strip **48** to use peg hole **38** for configurations for obtaining each of angles **B** and **C**.

Referring to **Figures 1** and **4**, runners **22** and **24** extend longitudinally beyond guiding strip **42**, and also extend longitudinally beyond guiding strip **48** when guiding strip **48** engages runners **22** and **24** to form each of a forty-five degree angle **B** and a sixty degree angle **C**. Ends **102** and **104** of runners **22** and **24**, respectively, are tapered at a forty-five degree angle in a line parallel to guiding strip **48** when guiding strip **48** is engaged with runners **22** and **24** at forty-five degree angle. Guiding strips **42** and **48** extend longitudinally beyond runners **22** and **24** when in engagement with runners **22** and **24**.

Platform **12** has peg lock holes **74** that are semi-circular in shape and arranged along lines **76** and **78**. Lines **76** and **78** run parallel to runners **22** and **24**. At least two peg lock holes **74** are situated along each of lines **76** and **78**. Peg lock holes **74** have straight edges **79** which are proximal to runner **24**. Between inner edge **70** and the straight edges **79** of those peg lock holes **74** in row **76** is a distance of 1 ½ inches. The distance between inner edge **70** and straight edges **79** of those peg lock holes **74** along line **78** is 3 ½ inches. Referring to **Figure 7**, peg locks **80** have a semi-circular longitudinal cross-section **81** and are operative to engage peg lock holes **74** from above upper face **14**, and to extend past lower face **16** of platform **12**. Each of peg locks **80** have a cap **82** that is circular in shape, each cap **82** having a shoulder **84** operative to prevent peg locks **80** from falling entirely through peg lock holes **74** in platform **12**.

During use, platform **12** is placed on top of a workpiece such that the workpiece is situated between runners **22** and **24**, and lower face **16** of platform **12** rests on the workpiece. Platform **12** is oriented, and guiding strips **42** and **48** are engaged with runners **22** and **24**, in accordance with the desired angle of the cut.

For example, referring to **Figure 4**, to obtain a sixty degree angle cut on workpiece end **90** of a 2x4 workpiece **88** using a hand-held power saw **92**, guiding apparatus **10** is placed over 2x4 workpiece **88** such that the ends **102** and **104** of runners **22** and **24** are proximal to workpiece end **90**. Guiding strip **48** is engaged with runners **22** and **24** by inserting peg **50** into peg hole **38** and peg **66** into peg holes **40** and **54**. Guiding apparatus **10** may be aligned with 2x4 workpiece **88** by sliding guiding apparatus **10** longitudinally

along 2x4 workpiece **88**. Once 2x4 workpiece **88** is aligned and placed against edge **70** of runner **24**, 2x4 workpiece **88** is held in place by peg locks **80** inserted into peg lock holes **74** along line **78**, the multiple peg locks **74** and the straight edges **91** of peg locks **80** operative to prevent lateral movement of 2x4 workpiece **88**.

Downward pressure is applied by hand onto upper face **14** of platform **12** such that lower face **16** of platform **12** engages top face **91** of 2x4 workpiece **88**, and friction between lower face **16** and top face **91** operates to hold 2x4 workpiece **88** in place against guiding apparatus **10**. Hand-held power saw **92** is aligned for the cut by resting the bottom of saw base plate **96** on runner **22** with base edge **94** of base plate **96** in contact with guiding edge **49** of guiding strip **48**. Blade **100** of hand-held power saw **92** is set in motion prior to blade **100** engaging 2x4 workpiece **88**. While keeping base edge **94** in contact with guiding edge **49** of guiding strip **48**, and base plate **96** on top of runner **22**, hand-held power saw **92** is moved in the direction along line **a** to engage and cut 2x4 workpiece **88**. Guiding strip **48** extends a distance beyond runners **22** and **24** sufficient to allow for a straight and accurate start and finish to the cut.

A cut at an angle of one hundred twenty degrees may be obtained using guiding apparatus **10** in the same configuration as described above, but by rotating 2x4 workpiece **88** one hundred eighty degrees around its longitudinal axis. Guiding apparatus **10** is prepared for a cut at an angle of forty-five degrees (or one hundred thirty-five degrees, upon rotating 2x4 workpiece **88** one hundred eight degrees around the longitudinal axis of 2x4 workpiece **88**) by positioning guiding strip **48** such that peg **50** engages peg hole

38 and peg **66** engages peg holes **54** and **40**. Similarly, guiding apparatus **10** may be used to obtain a cut at ninety degrees using guiding strip **42**. Multiple cuts along 2x4 workpiece **88** may be executed merely be sliding either guiding apparatus **10** or 2x4 workpiece **88** along the longitudinal axis of 2x4 workpiece **88**. Guiding apparatus **10** is designed to have few moving parts and to allow easy and quick alignment that is easily maintained during its use.

Platform **12** is shaped as having five edges in order to provide a large surface area of lower face **16** for engaging a workpiece and holding the workpiece in place when downward pressure is applied to upper face **14**, while also allowing for guiding strip **48** to be positioned in two different ways to obtain angles **B** and **C**. To allow for greater friction and better positioning, lower face **16** may be either textured or coated to provide a non-abrasive non-slip surface suitable for engaging a workpiece.

The extension of guiding strips **42** and **48** beyond runners **22** and **24** allows for a clean start and follow-through for the desired cut. Runners **22** and **24** provide upward support for base plate **96** to assist with guiding hand-held power saw **92** in alignment with the plane of the upper surface of a workpiece.

A typical hand-held power saw **92** having a base plate **96** with a base edge **94**, and a blade **100**, has a distance between base edge **94** and blade **100** that is between 5 inches and 5 ½ inches. For a hand-held power saw **92** with a distance between base edge **94** and blade **100** that is 5 ¼ inches, the preferred length, perpendicular to each of guiding strip

42 and guiding strip **48**, by which runners **22** and **24** extend beyond guiding strips **42** and **48** in a direction away from platform **12** is not less than **1** inch and not greater than 3 ½ inches. The maximum of 3 ½ inches is specified to allow tilting of blade **100** up to an angle of **45** degrees to allow for a double-angled cut such as the cut as shown in **Figure 9**. According to **Figure 9**, workpiece **150** is cut along lines **156** on its upper surface at an angle **E** of sixty degrees, and along line **158** on the side edge of workpiece **150** at an angle **D** of forty-five degrees. Referring to **Figures 1 and 8**, an alternative embodiment that allows for a maximum upper surface to runners **22** and **24** while allowing for a double-cut is one in which ends **102** and **104** of runners **22** and **24**, respectively, are tapered along outside edges **103** and **105** at an angle of forty-five degrees, such that runners **22** and **24** extend beyond guiding strips **42** and **48** in a direction away from platform **12** no greater than 4 ½ inches at the upper surfaces of runners **22** and **24**, and no greater than 3 ½ inches at the lower surfaces of runners **22** and **24**. For hand-held power saws of different dimensions, apparatus **10** may be modified such that the dimensions of runners **22** and **24** complement the dimensions of the particular hand-held power saw.

The guiding apparatus **10** may be used for workpieces of various sizes. Platform **12** may have additional peg lock holes at various distances from edge **70** of runner **24** for the purpose of holding workpieces of various widths. A 2x2 workpiece (not shown) may be cut using the peg lock holes **74** along line **76** to hold it in place. The width of guiding apparatus **10** also allows use for cutting a 2x6 workpiece (not shown) of actual dimensions 1 ½ inches by 5 ½ inches by allowing for distance **68** of 5 5/8 inches. For workpieces wider than a 2x6, guiding apparatus **10** may be designed so that distance **68** is

greater than 5 5/8 inches. To allow a user to hold a workpiece against either of runners **22** and **24**, additional peg lock holes (not shown) may be allowed such that the additional peg lock holes are placed at various desirable distances from runner **22**. Alternatively, rectangular peg holes (not shown) and rectangular peg locks (not shown) may be used and spaced such that each rectangular peg hole may be used to hold a workpiece against either of runners **22** and **24**.

Workpieces that are of a depth less than 1 ½ inches, such as mouldings and trim, may be cut using guiding apparatus **10** by placing such a workpiece on a filler piece, preferably of a width equal to or approximating the distance between runners **22** and **24**, that allows the upper surface of such a workpiece to be engaged by lower face **16** of platform **12**, while also decreasing the likelihood of lateral movement of the workpiece during the execution of a cut. Alternatively, lumber that is of a depth of ¾ inches, such as 1x2, 1x4 and 1x6 pieces, may be doubled up to have one of the lumber pieces act as filler.

To allow an even more secure engagement of a workpiece by peg locks **80**, peg locks **80** may be modified in design in accordance with **Figure 6** of alternative peg **120**. Alternative peg **120** has a body **122** and head **124**. Head **124** has a shoulder **126** and extensions **128** operative to prevent alternative peg **120** from falling entirely through peg lock holes **74** in platform **12**. Extensions **128** extend outwardly from the longitudinal axis of body **122** in a direction perpendicular to the straight edges **132** of body **122** such that head **124** and body **122** share a t-shaped flat face **130**.

Alternative peg **120** is operative to engage a peg lock hole **74** from above upper face **14**, and to extend past the lower face **16** of platform **12**, or, alternatively, to engage a peg lock hole **74** from lower surface **16**. When alternative peg **120** engages a peg lock hole **74** from lower surface **16**, head **124** rests on the work surface on which a workpiece rests, and t-shaped flat face **130** provides a surface operative to engage workpiece and to prevent workpiece from twisting or moving laterally during execution of a cut.

Cross-sectional shapes other than those indicated above may be used for peg locks **80** (or alternative pegs **120**) and peg lock holes **74**. For example, peg locks **80** may be cylindrical or rectangular pyramidal in shape, and peg lock holes **74** may accordingly be circular or rectangular in shape. However, it is preferable that peg locks **80** have flat faces, and, consequently, that peg lock holes **74** have a flat edges to complement peg locks **80**, as flat faces on peg locks **80** engage workpieces more securely than rounded faces, preventing a workpiece from twisting or moving laterally during the execution of a cut.

There are no screws required during use of apparatus **10** and no clamps or kerfs required to hold the workpiece in place.

While use of peg lock holes **74** and peg locks **80** decreases the likelihood of lateral movement, sufficient downward pressure on upper face **14** of guiding apparatus **10** also serves to keep a workpiece from moving. Distance **25** of 1 3/8 inches allows for a substantial surface area on edge **70** for engaging a workpiece, while ensuring that lower

face **16** may engage the upper surface of standard lumber workpieces such as 2x2, 2x4 and 2x6 pieces, which have actual depths of 1 ½ inches.

Alternatively, apparatus **10** may be used with a work table such as the Black & Decker Workmate **400** (Trademark) to facilitate holding a workpiece in place and preventing lateral movement during a cut. Referring to **Figure 5**, the Black & Decker Workmate **400** (Trademark) has a table surface **110** having perforations **112** for the insertion of accessories **114**. For example, in using apparatus **10** in conjunction with Black & Decker Workmate **400** (Trademark) to facilitate a cut in 2x4 workpiece **88** at a ninety degree angle, one side of 2x4 workpiece **88** is placed against edge **71** of runner **22** while the opposite side of 2x4 workpiece **88** is placed against edges **116** of accessories **114**, and force is applied to maintain this alignment.

While a uni-positional guiding strip, such as guiding strip **42**, may be more permanently attached to runners **22** and **24**, for packaging and storage purposes, it is preferred that guiding strips **42** and **48** be detachable. Guiding apparatus **10** may also be modified to allow for various other cut angles.

Use of guiding apparatus **10** does not require the use of triangles, protractors and other aids for measuring angles in order to obtain straight and accurate cuts for commonly used angles. There are few components to guiding apparatus **10** allowing for ease of use.

In the preferred embodiment, injection-moulded plastic would be used to make a durable, light-weight, inexpensive and precision-crafted guiding apparatus **10**. Alternatively, guiding apparatus **10** may be made of wood such that platform **12** is firmly secured to runners **22** and **24** using, for example, screws or nails and that pegs **44**, **46**, **50** and **52** are attached using, for example, glue or nails to upon insertion them into bored holes (not shown) in guiding strips **42** and **48**. While guiding apparatus **10** may also be constructed using metal, a balance would have to be reached between the rigidity of the metal, to ensure guiding apparatus **10** holds its shape, and the weight of guiding apparatus **10**, to ensure that guiding apparatus **10** is not too heavy and that its portability is not unduly impacted.

This invention has been described with reference to illustrative embodiments, rather than restrictive embodiments. Accordingly, this description is not intended to be construed in a limiting sense. Various modifications to the illustrative embodiments, as well as other embodiments of the invention, will be apparent to a person skilled in the art upon reference to this description. The scope of the invention is indicated by the appended claims rather than the foregoing description and all such modifications or embodiments that come within the meaning and range and equivalence thereof are intended to be embraced therein.